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ABSTRACT

The relationships among psychological differentiation, cognitive style, and body concept were investigated in 94 five- and six-year olds from the Houston, Texas Independent School District. The sample included males and females, and Blacks, Whites, and Mexican Americans. The Embedded Figure Test Preschool (EFT) was administered to determine field dependent or field independent cognitive style. About half of the Holtzman's Inkblot Test was used to obtain a Body Barrier Score (Br), indicating sense of a separate identity. From the Br scores indicating a low sense of identity, 26 subjects were selected for participation in an experiment. The experimental group received a socialization experience enhancing self-recognition of body characteristics, self-acceptance, and sense of self as a separate and independent entity. The training, continuing for two months, included four activities: (1) Hi, this is me!; (2) Look what I can do!; (3) I can wait!; and (4) How do I feel? Control group subjects received attention but no training. Posttests were repeated. Results indicated a correlation between EFT and Br scores; ethnic differences; and a gender and ethnic interaction. The training program appeared to enhance the sense of separate identity but did not affect cognitive style. (GDC)

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An Experimental Study of Self-concept and Cognitive Style as Indicators of Psychological Differentiation

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INTRODUCTION

Since the time of Darwin, scholars have been paying attention to the influence of the environment on human behavior. Individual as well as group differences in behavior have been explained in terms of the different demands and constraints placed upon the inhabitants by the ecological environments. Sharing a common emphasis on the adaptative nature of human behavior, these researchers set out to search for a systematic relationship between eco-cultural configuation and human behavior.

Some of these researchers stress the importance of the physical configuration of the ecological environment and the biological factors contributing to performance differences (Dawson, 1967a, 1967b). Others emphasize the importance of patterns of human interaction and cultural institutions on human performance (LeVine, 1973; Whiting, 1980; Whiting & Whiting, 1975). The theory of psychological differentiation represents one of the most ambitious attempts in formulating a comprehensive theoretical framework with which to encapsulate a multitude of variables: the ecological, the social cultural and human psychological variables (Witkin & Berry, 1975). The theory was originally developed by Witkin and his associates (Witkin et al, 1962) to explain individual differences in human cognitive performance; it was later expanded and elaborated by Berry (1976) to incorporate cultural and ecological dimensions and has become

one of the most widely used theoretical tools in describing and analyzing a wide range of differences in cross-cultural studies of human behavior (see Berry, 1976 for a comprehensive review of the theory).

Central to this theory is the concept of psychological differentiation. Spencer (1864), when commenting on the evolution of socio--cultural systems, remarked that "evolution is a change from a state of relative indefinite, incoherent homogeneity, to a state of relative definite, coherent heterogeneity through continuous differentiation and integration." Lewin (1951) has mentioned differention in his theory of psychological field. It was Witkin who formally incorporated the concept of differentiation in the individual psychological system (Witkin, 1954). Witkin and his associates (Witkin et al., 1962) suggested that "(Differentiation) when used to describe an individual's psychological system means a degree of separation of psychological areas.... It means as well specifity in manner of functioning within the area (p. 10)." The theory also suggests that psychological differentiation is a general property of the organism, and a system's property. It is a continuous dimension which can be used to describe human performance differences in cognitive as well as social emotional behaviors. As a property of the organism, psychological differentiation manifests itself in a variety of behavior indicators, through which the degree of differentiation of an

individual can be assessed.

In the perceptual/cognitive domain, the level of psychological differentiation manifests itself along a continuous dimension of the field-dependent and field-independent cognitive style. To the differentiated individuals, parts of the perceptual field are experienced as discrete rather than fused with their background (Witkin et al, 1962). These individuals are more field-independent in cognitive style. The perception of parts by the less differentiated individuals is more affected by the background. These individuals are more field-dependent in their cognitive styles. One of the measurements for this field-dependent and field-independent cognitive style is the Embedded Figure Test (EFT) (Witkin, 1950). The Embedded Figure Test consists of a series of figure each of which contains a simple figure embedded in a background of a more complex figure. The subject's task is to identify the simple embedded figure. Those who correctly identify more of these embedded figures within a given period of time, are the ones who have more field-independent cognitive styles.

In the social/affective domain, differentiation manifests itself in a clear and separate sense of the self (Witkin, et al., 1962). The operationalization of this sense of separate identity has been an interesting problem. Witkin and his associates (Witkin et al, 1962) approached this problem by analyzing the self-concept in two levels: the body concept and behavior

implications of the sense of separate identity. Draw-A-Person Text (DAP) was used to measure the body concept of viewing the "self" as a separate entity. A scoring system, the sophistication scale, describing the articulation and details of body parts of the figure drawn was developed for the scoring of this body concept. The sense of separate identity can also be inferred from a cluster of behaviors: functions without guidance, maintentance of direction in the face of contrary social judgements, and stabilities of self-concept across contexts (Witkin et al., 1962, summarized in Laboratory of Comparative Human Cognition, 1981).

As a systemic property, psychological differentiation serves as the central link which draws together a variety of behaviors to form a network of manifestations of the concept. Psychological differentiation manifests itself in a consistent way across these multiple domains of behaviors. As Berry (1970) puts it: "expectations are such that tasks which sample differentiation of various kinds of behavior should yield estimates of roughly similar levels of differentiation." Results of correlational studies by Witkin and Berry (1975) suggest consistency of measurements across the behavior indicators. However, in an earlier study by Witkin et al. (1962), it was noted that association between the body concept indicator and the perceptual indicators was high in some cases and low in others. In one case the relationship was a reversed one. Jahoda (1980)

pointed out that the correlations between indicators of cognitive and social domains are often moderate indicating that a substantial part of the variance must be accounted for by other factors.

To search for the origin of individual differences in psychological differentiation, Witkin and his associates carried out a series of correlational studies which established a relationship between socialization/child rearing patterns experienced by the subjects and the levels of psychological differentiation (Goodenough & Witkin, 1977; Witkin et al., 1962). The studies were originally carried out with samples of the same culture; to obtain larger variance of the child rearing pattern, cross-cultural studies were conducted. Witkin and Berry (1975) concluded that the amount of freedom allowed to the child, the conformity required of the child, the emphasis on the authority and the importance of the group are a set of factors that contribute to the differential development of psychological differentiation. This set of factors are looked upon as a set of interrelated and consistent factors and together, they form one dimension of socialization practice. Different societies can be rated along this dimension of socialization practice that Witkin, Price-Williams et al (1974) called "conformity." Different socialization practices are in turn associated with the socio-ecological factors of different culture groups (Berry, 1966, 1967; Berry and Annis, 1974). Berry (1976) suggested that the pattern of socialization experience serves as the mediating

process between eco-culture variables and individual psychological differentiation. Culture groups that are hunting and gathering in subsistence pattern, nomadic in settlement system and loose in socio-politico stratification tend to have child rearing practices that are relatively less strict in individual movements. Children from these societies tend to be more field-independent. On the other end of the spectrum, culture groups which are agricultural, sendentary in subsistence pattern and tight in socio-politico stratification tend to have child rearing practice that requires more conformity of the child and less freedom in individual movements. Children from these societies tend to be more field-dependent (see Witkin & Berry, 1975 for a summary of the studies). Studies which employed the concept of psychological differentiation and the field-dependent and field-independent cognitive styles have been carried out in a variety of culture groups across several continents (e.g., Buriel, 1975; Park & Gilmore, 1975; & Witkin, et al, 1974). The relevant eco-culture factors were expanded to include the levels of modernization, degrees of acculturation to Western culture, rural-urban differences and traditionalism and non-traditionalism; however, the mediating process remains the pattern of child rearing practice. Berry (1976) considered the eco-culture factors independent variables and concluded that there is a systematic covariation between this set of independent variables and the psychological differentiation measured in different culture groups.

The present study sought to address several questions concerning the theory of psychological differentiation. The first question concerns the issue of causality. The second concerns the measurement of the sense of separate identity. The third and a more fundamental question concerns the consistency between social/emotional indicators and cognitive/perceptual indicators of psychological differentiation.

The data suppporting the theory of psychological differentiation are largely results of correlational studies. As Jahoda (1980) mentioned in his review of cross-cultural studies, that since it is difficult to manipulate cultural variables, researchers have been forced to use correlational observations or quasi-experimental design (see also Berry, 1980). The levels of the designated "independent variables" were obtained, in these studies, through subjects' reports or ratings of the relevant cultural variable by the researchers. Although the "independent variables" were isolated for analyses, other variables of the culture groups under investigation were left alone to vary. As Jahoda indicated the results thus obtained are open to alternative interpretations.

The theory postulates correlations between global categories of variables. Price-Williams (1976) indicates that the lack of specificity in the relationship between different aspects of the cultural variables and the psychological variables is a

persistent problem in this theory. Similar concern was also voiced by the Laboratory of Comparative Human Cognition (1979). The theory implies a cause-effect relationship; but the data the implications are based on are a set of correlations between several levels of variables. The present study proposes to approach the issue of causality and specificity with an experimental study. The study was designed in such a way that one aspect of the child rearing practice was systematically varied and the results on both the cognitive/perceptual and social/emotional indicators of psychological differention observed in an attempt to varify the possible causal link between a specific culture variable and psychological differentation.

Draw-A-Person Test has been widely used as an alternative measure of children's intelligence (Goodenough, 1926). As a self-concept measure, the DAP lacks the necessary discriminant validity in that it is closely correlated with the artistic aptitude and the general intelligence of the subject (Wylie, 1974). The present study employed an alternative measure of the body concept, the Body Barrier score (Br) developed by Fisher and Cleveland (1968). The Br scale is conceptually similar to the body concept suggested by Witkin et al (1962). Since the Br scores are obtained through inkblot tests which only require the subject to give verbal responses, there is less chance for the results to be confounded with the artistic ability of the subject. The behavior implications of the Br score are similar

to those of the sense of separate identity suggested by Witkin et al (1962). Cross-cultural examinations with Rorschach protocols also reveal that the Br scores are associated with child rearing practices along the same dimension as described by Berry and Witkin (Fisher & Cleveland, 1968).

The present study consisted of two phases: a survey phase and an experimental phase. The survey phase was designed to test the relationship between Br scores and the Embedded Figure Test scores and to serve as a screening procedure to select subjects for the experiment. Subjects who scored zero on the Br score during the survey phase were recruited for the experiment. A training program designed to enhance the perception of the self as a separate entity was used in the experiment. Post tests were given to measure the change in both the Br scores and the scores on EFT.

The sample consisted of a similar number of male and female subjects with an ethnic composition of black, white and Mexican-American pre-school children roughly reflecting the population of public school children in Houston, where the study was conducted. Analyses of variances were also carried out to see if there were ethnic as well as gender differences in the sample.

METHOD

I. The Survey

Subjects

Subjects were ninety-four children of five and six years of age. The subjects were recruited from the pre-school programs of the elementary schools in the Houston Independent School District. There were fifty-one male students and fourty-three female students. The sample had an ethnic composition of fifty-three blacks, seventeen whites and twenty-four Mexican Americans.

Apparatus

1. The Embedded Figure Test

The Embedded Figure Test-Preschool forms (EFT-P)(Coates, 1972) was used. This test consists of a series of twenty-four cards. Each card bears a complex figure in which a simple triangle is embedded. The triangle is the same size and in the same orientation in each of the complex figure. The subject's task is to identify the simple triangle in the complex figure. The more simple figures correctly identified the higher the score for the EFT-P test.

2. Holtzman's Inkblot Test

The Holtzman's Inkblot Test consists of fourty-seven cards (two sample cards and fourty-five test cards). Due to time constraints only the first twenty-five cards were used for each of the subjects. Each card bears an inkblot pattern which bears

no counterparts in reality. The subject's task is to report to the test administrater what he "sees" in the inkblots or what he is reminded of by the inkblots.

Body Barrier Score (Br)

Body barrier (Br) refers to the responses of perception of objects with definite and well delineated boundaries and protective coverings, membranes, shells or skin for a given card. If the subject makes no reference to such items, Br is scored as zero, otherwise Br is scored as one. A subject's Br score is the cummulated scores obtained from the entire set of cards (Hill, 1972). The higher the Br score, the more sense of separate identity a subject has (Fisher & Cleveland, 1968).

Procedure

Each subject was called out of his (her) class during regular school hours and was escorted to a classroom set aside for the testing purpose where the tests were given individually. Half of the subjects were given the Holtzman first and the Embedded Figure Test second; the other half received the tests in reversed order to balance out the possible sequence effect.

II. The Experiment

Subjects

Subjects who scored zero in the Br Scale were recruited for the experiment. Consent for participating in the experiment was obtained from the parents (or guardians), the principals, the classroom teachers as well as the subjects themselves. Twenty

six subjects were thus recruited for the experiment. They were randomly assigned to a control group and an experimental group. Thus, there were thirteen subjects in each of the groups to begin with. Four subjects in the control group dropped out from the project due to factors such as moving or sickness, leaving the control group with nine subjects for the final analyses. Background information was obtained for each of the subjects through interviews with teachers. None of the subjects were noted to have any emotional problems.

The Training Program

The training program was deigned to give the subjects a kind of socialization experience aimed at enhancing: (1) the recognition of the self (body characteristics); (2) the acceptance of the self; and (3) development of a sense of the self as a separate and independent entity. The training program was designed on the basis of the definitions of the sense of separate identity suggested by Witkin et al (1962) and Fisher and Cleveland (1968). Four sets of activities were included in the training program:

(1). Hi, this is me!

This part of the program was used to help the subject develop a clear perception of his (her) own body, a recognition of the body's characteristics. Children were escorted to view themselves in the mirror, to study their images as a group and to study the image of each of the children in the group.

Instantaneous photographs were taken of the children either in a group or individually. Children were encouraged to study their own images in the photographs and to verbalize the description of their own images. Positive remarks about the images of each of the children were made by the trainers; the children were also encouraged to make positive remarks about themselves as well as their images.

(2) Look, What I can Do!

A set of toys that require assemblying were used. The objectives of this set of activities were to have children actively engaged in the assemblying of the toys, to make the toys "go", to observe their activities and to realize the consequences of their activities.

The activities were arranged according to the complexity involved in assemblying the toys. Training started from the simplest toy, moved progressively to the most complex toy. Children were encouraged with songs and hugs by the trainers when they experienced difficulties in putting the toys together. Trainers provided guidance and demonstrations to show the children how to assemble the toys. In no case, did the trainers do the assemblying for the subjects. It was insisted that the children had to do this themselves.

(3) I can wait!

This set of activities was designed for subjects to observe and to hold their impulses. At the end of each training session,

the subjects were asked to pick up the toys. Rewards were given for doing so. The rewards were given on the delayed basis. The period of delay started at zero minutes and progressed finally to five minutes at the end of the training program. Subjects were told to observe the delay and to sit still while waiting for rewards. The trainers led a cheer when the delay period was over.

(4) How do I feel?

This set of training activities was inspired by the idea in "Transactional Analysis for Tots" (Freede, 1974). At the beginning of each of the training session, the trainers asked each subject how he(she) felt that day. Pictures of happy faces, angry faces and sad faces were shown to the children to help them identify their own feelings. Subjects were encouraged to use whatever means they had to express their feelings including body gestures, drawing, dancing, using play dough, etc.

Duration and Frequency of the Training

Subjects in the experimental group received the training for two hours each session, for two session per week, for two months. Subjects in the control group were "baby sat" by the same trainers for the same duration and at the same frequency as the training program to control for possible "attention effect."

Experimenters/Trainers

The four experiemnters/trainers were graduate students enrolled in the applied master's program in psychology at Texas

Southern University. The trainers were selected on the basis of their interests in working with children and their competence in testing. They had received extensive training before actually conducting the training program with children.

The experiment was conducted in such a way that opportunities were provided for the trainers to develop equal rapport with the subjects in the experimental groups and the subjects in the control group, to minimize any experimenter's biase.

Post Tests

Post tests with the EFT-P and the Holtzman's Inkblot test were carried out when the training program concluded. The same experimenters and testing procedures were used for the post tests.

RESULTS

Results of the study are presented in two parts: results of the survey and the reuslts of the experiment. Results of the survey are presented in Table 1 and 2. The Body Barrier scores correlated significantly with the scores of the Embedded Figure Test ($r=0.31$, $N=94$, $p<0.01$). Ethnic and gender differences were obtained in the Br scores. This result is consistent with literature report of Draw-A-Person Test. Scores on EFT-P showed significant ethnic differences but no significant gender differences. It is noted that the female subjects in all three ethnic groups showed consistently lower scores than the scores obtained by the male subjects. The magnitudes of the differences were small and did not reach statistical significances. Interaction effect between gender and ethnic differences, however, revealed a significant result. These results are consistent with previous findings on gender and ethnic differences in cognitive style and the sense of separate identity (Witkin et al, 1962; Witkin & Berry, 1975).

Insert Table 1 and 2 approximately here

The results of the experiment can be studied in two parts: differences between pre- and post- test for the experimental and control group combined and post-test difference between the experimental and the control group.

Both the experimental and the control group showed increases in the Br scores ($\bar{X}$pre-test=0. $\bar{X}$post-test=3.14, t=2.78 df=20 P<.01). Because both groups had substantial interactions with the trainers and for both groups, it was the second time the subjects took the tests, these pre-post-test differences might reflect an "attention" effect and an increase in test taking sophistication. There is also a significant difference between the pre-test and post-test in the EFT-P ($\bar{X}$pre-test=3.26, $\bar{X}$post-test=5.74, t=2.08, df=20, P<.05). This result is, perhaps, also best explained in terms of the increase in test taking sophistication and the attention effect.

Post test Br scores showed a significant difference between the experimental group and the control group ($\bar{X}$control=1.38, $\bar{X}$experimental=4.62, t=2.89, df=20 P<.005) in dictating the effect of the training program in enhancing the "sense of separate identity." There were no corresponding differences in the scores of EFT-P (t=0.08 df=20, P>0.10). As a matter of fact, the control group showed a slightly higher gain ($\bar{X}$D=2.89) in EFT-P than that by the experimental group ($\bar{X}$D=2.15). These results indicate that the training program by itself did not have any effect on the development of the cognitive styles of the subjects as measured by EFT-P.

DISCUSSION

Several questions were addressed in the present study: whether an experimental manipulation of socialization experience can affect the development of the sense of separate identity and a more field-independent cognitive style and whether a conceptually similar self-concept measure, the Body Barrier score, can yield the same correlations with the cognitive style measure as the Draw-A-Person Test. These two questions are conceptually related to a third and more fundamental question: whether the consistency between cognitive/perceptual measurement and social/emotional measurements indicate that the two measurements originate from a single source variable.

Results of the study indicate that the Br scores correlated significantly with the cognitive/perceptual measure of EFT-P. Because the Br scores were obtained through sujbects' verbal responses, there was less chance for this measurement of self-concept to be confounded with the artistic aptitude or perceptual ability of the subjects. This result adds support to Witkin and Berry's claim of intercorrelationship between behavior indicators in the cognitive/perceptual domain and those in the social/emotional domain.

Results of the experiment indicate that the experimental manipulation of the socialization experience has significantly enhanced the sense of separate identity. This result also adds to Witkin and Berry's theory (Witkin & Berry, 1975) that

socialization experience contribues to the development of this sense of separate identity. This result, thus, makes the correlational data obtained by Witkin and Berry more meaningful in that the study has established a casual link between a socialization experience and a behavior variable. By employing an experimental approach, the present study represents a small attempt to bring culture variables into experimental scrutiny and therefore presents a modest effort toward making methodological advancement for cross-cultural studies.

The training program, though significantly enhanced the sense of separate identity for the subjects, did not bring about corresponding changes in the cognitive styles. Questions are thus raised concerning domain consistency in the concept of psychological differentiation. If psychological differentiation is a product of cultural conditioning and it is the common source process which gives rise to the cognitive/perceptual behavior indicator as well as the socia/emotional behavior indicator, it follows that experimental manipulation of one of the behavior indicators of this source variable should bring about corresponding changes in the other indicator of the same underlying variable. Results of the present study seem to suggest that the socialization experience received by the experimental group has a significant effect on the self-concept indicator but not the cognitive style indicator. The cognitive/perceptual indicator, although it correlated with the

social/emotional indicator, did not respond in the same way to the experimental treatment. It is therefore questionable whether these two "indicators" are originated from the same source variable.

Most of the evidence supporting the doubt on cross-domain consistency of the concept of psychological differentiation came from within culture studies (Laboratory of Comparative Human Cognition 1981). Within the same ethnic group, field-independent cognitive styles were found to be associated with the levels of educational achievement (Wagner, 1978). Dawson (1967a, 1967b) and Berry (1966) obtained significant correlations between education and performance on Block Design and Embedded Figures Tests among African and Eskimo adults. Furthermore, in within culture studies, "while substantial correlations with the cognitive performances and education are found, correlations with socialization index are variable and quite low on the average" (Laboratory of Comparative Human Cognition, 1981). The work of Irwin, Engle, Klein and Yarbrough (1976) found that ratings of sources of intellectual stimulation did predict performance on Embedded Fiture Tests. The study, however, failed to support the hypothesis of a correlation between mother's traditionalism and EFT performance.

These findings, when considered together, seem to suggest two different but parallel processes for the performances on cognitive/perceptual indicators and the performance on

social/emotional indicators of psychological differentiation. While the former is more closely assosciated with education and intellectual stimulation; the latter is more closely related to the socialization experience. In many of the cultural groups, the opportunity for education and intellectual stimulation as well as the type of socialization experience which places more emphasis on the individual are associated with each other. In developing countries as well as among different ethnic groups in the United States, degrees of acculturation to Western culture and the emphasis on conformity are often related to the opportunities for access to formal education (Werner, 1979). The observed correlations between the cognitive indicators and the social/emotional indicators are perhaps more of a reflection of this historical social phenomenon than a reflection of a common source variable.

Witkin and Berry's (1975) theory proposed a network of interrelating variables from the macro-economical levels to the micro-social and individual levels. The elegance of the theory lies in the logical connections between these layers of variables that brings this diversity of variables into a coherent whole. The impressive amount of correlational data begs for further reserach to clarify the specific relationships between individual variables. The "conformity dimension of the socialization process refer to constraints and regulations the parents place on the child's behavior (Witkin Price-Williams, et al, 1974).

These constraints would necessarily include constraints over the child's interaction with a large variety of stimuli in his environment, including the self. The present study only manipulated the socialization experience in reference to the self; it is therefore necessary to qualify the conclusion of the present study to cover only the self-related aspect of socialization experience rather than socialization experience or "conformity" as a whole. Opportunities for intellectual stimulation which comes with a more relaxed child rearing experience may very well affect the development of a more field-independent cognitive style.

The theory of psychological differentiation suggests a constellation of several sets of global categories of variables surrounding a central concept of differentiation while treating each of the global categories of variables as a single, univariate dimension. The finding of the present study established a causal relationship between one aspect of socialization experience and one aspect of psychological differentiation. It is proposed that future efforts be directed toward finer analyses of these global categories of variables: socialization and psychological differentiation, each of which is a multi-dimensional mosaic, to identify the specific elements of the socialization process which directly contribute to the specific dimension of cognitive or social/emotional function of the individual. These specific causal relationships between variables would add another link to the elaborate theory proposed by Berry (1976).

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Table 1. Mean Body Barrier Scores for Black, White and Mexican American and Female Subjects

Ethnic Identity	n	Male	n	Female
Black	25	1.88	28	1.11
White	10	3.22	7	2.86
Mexican-American	16	1.88	8	2.00

Total N=94

Ethnic Differences	F=61.43**	df=2/88
Gender Differences	F=17.00**	df=1/88

** p<o.ol